An Investigation of the Inflation-Hedging Ability of Housing and Stock Returns in Korea

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An Investigation of the Inflation-Hedging

1)

Sung-Hoon Sim* and Jong-Il Choe**

This paper analyses the inflation hedging effectiveness of housing and stock returns in Korea. The empirical results reveal that housing provides effective hedge against inflation but stock does not. Further, the results of both the least square regressions and the VAR analysis suggest that the rental markets produce more attractive hedges against inflation than do sale markets. This finding implies that the rental markets are considered as being more flexible in price adjustment to inflation shock, compared to the sale markets.

JEL Classification: R15, R29

Keywords: Housing Price, Stock Price, Inflation, VAR

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I. Introduction

Inflation risk is of great concern to investors who hold assets for long-term returns because the assets decrease in value as inflation increases. In this respect, the assets to provide effective hedges against inflation have been regarded as being attractive. Traditionally, there has been a common belief that real estate provides inflation hedges in many parts of the world. Further, it has been revealed that real estate is better performer than common stock in hedging against inflation (e.g., Fama and Schwert, 1977; Hartzell et al. 1987; and Liu et al., 1997).

While the inflation hedging capability of real estate has been extensively researched in a number of markets, there has been little work on this issue related to the Korean market. The previous studies concerned with Korean market usually analyzed the relationships between inflation and financial assets such as stocks (e.g., Lim, 1990), without considering real estate. In addition, the structure of Korean market stemming from small country size with dense population might provide interesting analytical suggestion. Since the price of real estate is expected to rise in the long run with inelastic and limited supply of land, real estate has been considered to produce an effective inflation hedging ability. Finally, the sample period adopted also allows the study to address an issue whether real estate provides a hedge against inflation during periods of relatively stable inflation rates. On this account, this paper examines the inflation-hedging characteristics of both residential properties and stocks in Korea, allowing the comparisons with those countries whose markets have been examined in previous work.

Followed by Fama and Schwert (1977), there have been a number of researches on the inflation-hedging characteristics of different assets in several countries. For the U.S. real estate market, there exists consistent evidence of effective hedge against expected inflation (Fama and Schwert, 1977; Brueggeman et al., 1984; Hartzell et al., 1987; Webb, 1990; Liu et al., 1997; and Bond and Seiler, 1998). However, the empirical results on the unexpected inflation are less conclusive (Rubens, et al., 1989; and Bond and Seiler, 1998).
On the other hand, U.K real estate market also shows attractive hedge against expected inflation (Limmack and Ward, 1988; Matysiak et al., 1996; and Hoesli et al., 1997). For the case of unexpected inflation, the previous studies give mixed results (Limmack and Ward, 1988; and Hoesli et al., 1997). The empirical results are similar for studies in different countries like Australia (Newell, 1996), Hong Kong (Ganesan and Chiang, 1998), and Singapore (Sing and Low, 2000).

The general conclusion on the empirical results of U.S. stocks is that the stocks do not offer a good protection against inflation (Bodie, 1976; Fama and Schwert, 1977; Solnik, 1983; Hartzell et al., 1987; and Rubens et al., 1989). The empirical results show similarity in poor hedging capability of stocks in countries like U.K. (Liu et al., 1997; and Hoesli et al., 1997), Swiss (Hoesli, 1994; and Liu, et al., 1997), Canada (Newell, 1995), New Zealand (Newell and Boyd, 1995), and Hong Kong (Ganesan and Chiang, 1998).

In sum, we have following general conclusions from the cited studies. Real estates were found to provide significant hedges against both actual and expected inflation but to show poor inflation-hedging ability against unexpected inflation in most of the countries. Many of the studies also conclude that stock is not inflation hedge, though there are conflicting results in some of the tests.

Based on the methodology proposed by Fama and Schwert (1977), this paper initially investigates the hedging effectiveness of both housing and stock against actual, expected and unexpected inflation rates. Then, this study extends the traditional static analysis of Fama and Schwert (1977) into the dynamic one by using the method of VAR (vector autoregression).

We proceed as follows. The next section discusses models and data sets. Section III explores the empirical results of standard least square regression and VAR. The final section presents summary and conclusions.
II. Methodology and Data Analysis

Fisher (1930) considers that expected nominal interest rate can be expressed as the sum of expected real interest rate and expected rate of inflation. This is also generalized that expected nominal return for an asset should vary in a one-to-one relationship with expected inflation. Fama and Schwert (1977) utilize this Fisher’s hypothesis to examine the inflation-hedging ability of assets such as residential real estates, common stocks, and U.S. government bonds. Their study extends the work of Fisher (1930) such that the nominal return of an asset is a function of expected and unexpected inflation. Fama and Schwert (1977) model can be defined as follow:

\[
R_{jt} = \alpha_t + \beta_j E(\Delta_t | \phi_{t-1}) + \gamma_j [\Delta_t - E(\Delta_t | \phi_{t-1})] + \epsilon_{jt},
\]

where:

\( \phi_{t-1} \) = information set available at time \( t-1 \);

\( j \) = asset \( j \);

\( E \) = expectations operator;

\( R_{jt} \) = nominal return on asset \( j \);

\( \Delta_t \) = actual rate of inflation; and

\( \epsilon_{jt} \) = error term.

In equation (1), \( E(\Delta_t | \phi_{t-1}) \) represents the rate of expected inflation and \([\Delta_t - E(\Delta_t | \phi_{t-1})] \) indicates unexpected inflation rate. The constant term \( (\alpha_t) \), therefore, implies the real rate of return. If \( \beta \) is statistically indistinguishable from unity, an asset is said to be a perfect hedge against expected inflation, whereas the asset gives a hedge against unexpected inflation when \( \gamma \) is one. Moreover, when both \( \beta \) and \( \gamma \)
are unity, an asset is said to be a complete hedge against inflation.

When the above model is used for the empirical test of inflation hedging ability, the proxy for the expected inflation is an important factor. Two procedures are used in this study to proxy for expected inflation. First and following Gültekin (1983), the contemporaneous inflation rate is adopted as a proxy for expected inflation with the assumption of perfect expectations on the inflation. Thus, the model can be represented as

\[ R_{jt} = \alpha_t + \beta_j \Delta_t + \varepsilon_{jt}. \]  

(2)

Secondly, ARIMA (autoregressive integrated moving average) models are selected as additional proxies for expected inflation. Once obtained the series for the expected inflation rate, unexpected inflation is computed by subtracting expected inflation from actual inflation (i.e., \( \Delta_t - E(\Delta_t|\phi_{t-1}) \))\(^1\).

In general, using time series data for the regression models as equation (1) and (2) is likely to violate the assumptions of independent and uncorrelated error terms. Our preliminary empirical results have provided significant positive autocorrelations in the error terms in the above models. As an alternative, we adopt the following models in which the lagged dependent variables are included:\(^2\)

\[ R_{jt} = \alpha_t + \beta_j E(\Delta_t|\phi_{t-1}) + \gamma_j [\Delta_t - E(\Delta_t|\phi_{t-1})] + R_{jt-1} + \varepsilon_{jt}, \]  

(3)

\[ R_{jt} = \alpha_t + \beta_j \Delta_t + R_{jt-1} + \varepsilon_{jt}. \]  

(4)

The model is estimated using monthly data from January 1986 to December 1997.\(^3\)

---

1) The ARIMA proxy to estimate expected inflation is ARIMA (2,0,3).
2) It needs quite long-lagged error terms to remedy the autocorrelations because the model of 20-lagged autoregressive process error terms could not correct the autocorrelations. These results are not included but are available on request. We present the empirical results for the models of equations (1) through (4).
First, the real estate data used in this study consists of both housing sale and rental price indices reported by the Housing and Commercial Bank of Korea. Since apartment comprises the most of housing types in Korea and accounts for more than 50 percent recently, we also examine the hedging ability of apartment against inflation. For the stock index, Korea Stock Exchange (KSE)’s index, called as KOSPI (Korea Composite Stock Price Index), is employed. KOSPI is a price-weighted index based on an aggregate market value using a base date of January 4, 1980 and a base index of 100. The Consumer Price Index (CPI) is used to proxy price level. The data series for CPI is available in the Monthly Bulletin issued by the Bank of Korea. The rate of inflation is defined as the natural logarithm of the ratio of the value of CPI at time $t$ and $t-1$. The nominal assets returns for housing and stocks, $R_t$, are also measured as the case of inflation rate as follows:

$$
\Delta_t = \log(CPI_t / CPI_{t-1}),
$$

(5)

$$
R_{jt} = \log(P_{jt} / P_{jt-1}),
$$

(6)

where:

$\Delta_t$ = actual rate of inflation in period $t$, based on the CPI;

$R_{jt}$ = returns on housing and stock in period $t$; and

$P_{jt}$ = housing price and stock indexes in period $t$.

3) Most price levels in Korea collapsed due to the impact of Korean financial crisis in the end of 1997. And it took more than one year for the prices to be recovered to the levels prior to the crisis. To avoid the effect of these dramatic changes in the price levels on regression results, the data after 1997 has been excluded.

4) We adopt housing sale and rental values as representative series for real estate because only housing series can be available on the monthly basis.

5) The growth rate of apartment is about 25% point (i.e., form 22.7% to 47.7%) during 1990-2000, whereas the type of single housing has decreased 29% point (i.e., from 66.0% to 37.1%) during the same period.
III. Empirical Results

1. Least Square Analysis

Empirical works based on the time series data assume that the underlying time series are stationary. To avoid the problem of spurious regression, all the series examined are required to be the same order of integration in the equation as the previous inflation-hedging studies made the implicit assumption of the same order of integration. All the variables in equation (1) are tested for their order of integration using the Phillips-Perron (1988) approach, and the results are reported in <Table III-1>. The results indicate that all the test statistics in the last column are large enough to reject the null hypothesis of a unit root, and thus all the transformed series in equation (5) and (6) are stationary time series with the same order of integration (i.e., I(0)). Therefore, we use the series for the conventional OLS models such as equation (1) through (4).

<table>
<thead>
<tr>
<th>&lt;Table III-1&gt; Unit Root Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>RHPIS</td>
</tr>
<tr>
<td>RHPIR</td>
</tr>
<tr>
<td>RAPTS</td>
</tr>
<tr>
<td>RAPTR</td>
</tr>
<tr>
<td>RST</td>
</tr>
<tr>
<td>RCPI</td>
</tr>
</tbody>
</table>

Note: RHPIS = All-housing sale return; RHPIR = All-housing rental return; RAPTS = Apartment sale return; RAPTR = Apartment rental return; RST = Stock return; RCPI = Actual rate of inflation based on CPI.
### Table III-2: Regression Results for Actual Inflation

<table>
<thead>
<tr>
<th></th>
<th>Panel A</th>
<th>Panel B</th>
<th>(Durbin’s $h$ statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\alpha$</td>
<td>$\beta$</td>
<td>$R^2$</td>
</tr>
<tr>
<td>RHPIS</td>
<td>0.0011</td>
<td>0.4014**</td>
<td>0.042</td>
</tr>
<tr>
<td>RHPIR</td>
<td>0.0038**</td>
<td>0.5924**</td>
<td>0.041</td>
</tr>
<tr>
<td>RAPTS</td>
<td>0.0021</td>
<td>0.5663**</td>
<td>0.044</td>
</tr>
<tr>
<td>RAPTR</td>
<td>0.0042**</td>
<td>0.8492***</td>
<td>0.066</td>
</tr>
<tr>
<td>RST</td>
<td>0.0085</td>
<td>-0.5500</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHPIS</td>
<td>0.0000</td>
<td>0.2257*</td>
<td>0.444</td>
</tr>
<tr>
<td>RHPIR</td>
<td>0.0008</td>
<td>0.5495**</td>
<td>0.255</td>
</tr>
<tr>
<td>RAPTS</td>
<td>0.0000</td>
<td>0.2982*</td>
<td>0.506</td>
</tr>
<tr>
<td>RAPTR</td>
<td>0.0003</td>
<td>0.7926***</td>
<td>0.287</td>
</tr>
<tr>
<td>RST</td>
<td>0.0066</td>
<td>-0.3991</td>
<td>0.007</td>
</tr>
</tbody>
</table>

Notes: 1. $DW$ denotes Durbin-Watson statistics.
2. Unlike the results of panel A that are based on the equation (2), the $p$-values in the parenthesis of panel B indicate no autocorrelations in the system. The results in panel B are based on the equation (4).
3. * Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level, respectively.

Panel B of Table III-2 provides the regression results to test the hedging ability of assets against actual inflation, using equation (4). The regression coefficients are all positive and statistically significant with exception of stock return series (RST) which produce a negative and an insignificant coefficient. This indicates that the stocks are no hedges against actual inflation. Among the returns on housing, apartment rental return has highest coefficient of about 0.8. For the housing markets, the coefficients of returns on rentals are about two times larger than those of returns on sales. This result implies that rental market’s price adjustment is more sensitive to inflation than that of sale market and is very intuitive. That is, rental market would be less sticky in the price adjustment to the inflation compared to sale market because, in general, rental market can be regarded to more easily response to the exogenous shock such as inflation.

6) For stock return (i.e., RST), since the $p$-value in the parenthesis in panel A of Table III-2 indicates that there is no autocorrelations in the error term, we adopt this model to analyze the inflation-hedging ability of stocks.
Panel B of <Table III-3> shows the results of monthly percentage changes in assets on both expected and unexpected inflation by running the empirical model given by equation (3). For the expected inflation, the results mirror those as the case of actual inflation. All series, except for stock return, are positive and statistically significant.7)

### <Table III-3> Regression Results for Expected and Unexpected Inflation

<table>
<thead>
<tr>
<th></th>
<th>$\alpha$</th>
<th>$\beta$</th>
<th>$\gamma$</th>
<th>$R^2$</th>
<th>(DW)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHPIS</td>
<td>0.0155***</td>
<td>0.4086***</td>
<td>-0.0001***</td>
<td>0.125</td>
<td>0.904(0.000)</td>
</tr>
<tr>
<td>RHPIR</td>
<td>0.0224***</td>
<td>0.6004**</td>
<td>-0.0002***</td>
<td>0.104</td>
<td>1.288(0.000)</td>
</tr>
<tr>
<td>RAPTS</td>
<td>0.0196***</td>
<td>0.5752***</td>
<td>-0.0002***</td>
<td>0.107</td>
<td>0.762(0.000)</td>
</tr>
<tr>
<td>RAPTR</td>
<td>0.0237***</td>
<td>0.8562***</td>
<td>-0.0002***</td>
<td>0.121</td>
<td>1.270(0.000)</td>
</tr>
<tr>
<td>RST</td>
<td>0.1175***</td>
<td>-0.5082</td>
<td>-0.0013***</td>
<td>0.082</td>
<td>2.012(0.462)</td>
</tr>
<tr>
<td><strong>Panel B</strong></td>
<td>(Durbin’s $h$ statistic)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHPIS</td>
<td>0.0061*</td>
<td>0.2379*</td>
<td>-0.0000*</td>
<td>0.458</td>
<td>-1.390(0.164)</td>
</tr>
<tr>
<td>RHPIR</td>
<td>0.0120**</td>
<td>0.5580***</td>
<td>-0.0001*</td>
<td>0.275</td>
<td>0.536(0.592)</td>
</tr>
<tr>
<td>RAPTS</td>
<td>0.0067*</td>
<td>0.3103*</td>
<td>-0.0000</td>
<td>0.514</td>
<td>-0.084(0.933)</td>
</tr>
<tr>
<td>RAPTR</td>
<td>0.0118*</td>
<td>0.8015***</td>
<td>-0.0000*</td>
<td>0.304</td>
<td>1.490(0.136)</td>
</tr>
<tr>
<td>RST</td>
<td>0.1178***</td>
<td>-0.5192</td>
<td>-0.0013***</td>
<td>0.082</td>
<td>-1.260(0.207)</td>
</tr>
</tbody>
</table>

Notes: 1. DW denotes Durbin-Watson statistics.
2. The results of panel B are based on the equation (3), which show no autocorrelations in the error terms, whereas the results of panel A based on the equation (1) show autocorrelations.
3. * Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level, respectively.

With higher beta coefficients and adjusted $R^2$ than the case of actual inflation, housing returns provide an increased power of hedgeability against expected inflation. Only with exception of RAPTS, RHPIS, RHPIR and RAPTR show all significant but perverse hedges against unexpected inflation since the $\hat{\gamma}$ coefficients are negatively related. Further, the values of $\hat{\gamma}$ coefficients are very small (at most 0.01%) and thus are negligible in hedging against unexpected inflation though they are not statistically different from unity. As in the

7) For stock return, the result of panel A in <Table III-3>, showing no autocorrelations, is adopted to analyze.
case of actual inflation, the price adjustment to expected inflation in rental market seems to be performed more easily than does that of sale market. On the other hand, stock returns, with relatively high but negative coefficient, fail to show an effective hedgeability against expected inflation. Although the stock return series offer a significant hedge against unexpected inflation, the hedging capability can be regarded as being perverse since the \( \hat{\gamma} \) coefficient shows a negative sign.

In general, there is evidence that housing properties yield better effectiveness against expected inflation shocks than unexpected inflation trends. This finding indicates that when used for personal forecasts of expected inflation, the investment in residential property provides at least some protection against inflation. In fact, this might be the case in Korea especially during the sample period when the Korean government’s macroeconomic policy of targeting low and stable inflation was successful.

2. VAR Analysis

In this section, we focus on the crucial issue of how housing and stock markets respond to an inflation shock, based on the analyses of impulse response functions and variance decompositions. The VAR models used for impulse response functions and variance decompositions are as follows:

\[
R_{jt} = \alpha_1 + \sum_{i=1}^{n} \beta_{1i} R_{jt-1} + \sum_{i=1}^{n} \gamma_{1i} \Delta_{t-i} + \epsilon_{1t},
\]

\[
\Delta_{t} = \alpha_2 + \sum_{i=1}^{n} \beta_{2i} R_{jt-1} + \sum_{i=1}^{n} \gamma_{2i} \Delta_{t-i} + \epsilon_{2t},
\]

where \( R \) represents the returns on both housing and stock, and \( \Delta \) indicates inflation rates. The disturbances \( \epsilon_{1t} \) and \( \epsilon_{2t} \) are assumed to be uncorrelated. The restricted version of each equation includes appropriately selected lagged values of the variables, based on the minimum value of Akaike’s final prediction error.\(^8\)
1) Impulse Response Analysis

The results reported in <Table III-2> and <Table III-3> do not provide an explicit understanding of dynamic structure of the model, whereas the impulse response coefficients from a VAR system allow us to trace out the time path of various shocks on the variables. Since impulse response analysis can quantify and graphically demonstrate the time path of the effects of inflation rates on assets, we examine the impact of inflation on housing and stock returns in Korea during the period from 1986 to 1997, using the VAR model as in equation (7).

<Figure III-1> (a) through (d) depict the impulse response functions for housing prices in response to change in CPI. The exhibits show the responses of both all-housing and apartment markets to one standard deviation shock in CPI, respectively. From the exhibits, one standard deviation shocks given to inflation rates produce immediate positive responses in both the all-housing (and apartment) sale and rental markets. All-housing and apartment sale prices rise after the shocks and gradually decease until reaching their lowest levels after 16 months. In housing rental markets (i.e., <Figure III-1> (b) and (d)), the impulse responses to shocks in inflation show similar patterns depicted as in the responses of housing sale markets. Shocks to inflation raise the price returns of both all-housing and apartment rentals in the first month, and then decrease responses of the returns up to the following 8 months. A shock to the inflation, however, seems to produce more responses in the rental markets. That is, one standard deviation shock in inflation induces contemporaneous increases of no more than 0.004 units in both all-housing and apartment sale markets, whereas the corresponding exhibits in rental markets are close to 0.008 unit. In short, in the case of rental markets, the magnitudes of impulse responses are double and the lengths of responses to inflation shocks are half, compared to the sale markets. This fact agrees with the results presented in the previous section (i.e., section III. 1) that the rental markets are more flexible than sale markets in the price adjustment

8) For the all price series, lag length is one. That is, AR(1) model is selected for the VAR models.
to a change in inflation. Meanwhile, a shock to inflation generates an immediate negative response in the stock market. Returns on the stocks fall after an inflation shock and reach the lowest level just after the first month, and remains at the minus levels for the next following months.

(a) Response of RHPIS to RCPI
(b) Response of RHPIR to RCPI

(c) Response of RAPTS to RCPI
(d) Response of APTR to RCPI

(f) Response of RST to RCPI

*Figure III-1* Impulse Responses of Housing and Stock Prices to a Shock in Inflation
2) Variance Decompositions

Variance decompositions of the forecast errors for each asset market are required in order to represent the relative importance of the shocks in inflation. The variance decompositions show the portion of variance in the prediction for each variable in the system due to its own shocks versus shocks to the other variable. As in the case of impulse response analysis, we only report the variations of housing and stock prices that are explained by shocks in inflation rates.9)

<Table III-4> Variance Decompositions: Portion of Variance of Asset Returns Explained by Shocks to Inflation Rate

<table>
<thead>
<tr>
<th>Months</th>
<th>RHPIS</th>
<th>RHPIR</th>
<th>RAPTS</th>
<th>RAPTR</th>
<th>RST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.24</td>
<td>2.45</td>
<td>1.49</td>
<td>5.29</td>
<td>0.00</td>
</tr>
<tr>
<td>3</td>
<td>18.17</td>
<td>30.53</td>
<td>12.97</td>
<td>29.05</td>
<td>1.19</td>
</tr>
<tr>
<td>5</td>
<td>20.26</td>
<td>31.36</td>
<td>14.76</td>
<td>29.74</td>
<td>1.19</td>
</tr>
<tr>
<td>7</td>
<td>20.61</td>
<td>31.38</td>
<td>15.14</td>
<td>29.75</td>
<td>1.19</td>
</tr>
<tr>
<td>9</td>
<td>20.67</td>
<td>31.38</td>
<td>15.23</td>
<td>29.75</td>
<td>1.19</td>
</tr>
<tr>
<td>11</td>
<td>20.68</td>
<td>31.38</td>
<td>15.25</td>
<td>29.75</td>
<td>1.19</td>
</tr>
<tr>
<td>12</td>
<td>20.68</td>
<td>31.38</td>
<td>15.25</td>
<td>29.75</td>
<td>1.19</td>
</tr>
</tbody>
</table>

As presented in <Table III-4>, the results show that shocks to inflation rate account for more variation in rental price than in selling price for the housing markets. For instance, a shock to inflation explains about 31.4% of the variance in all-housing rental price return over 12 months of the year. In the same months, a shock to inflation explains only 20.7% of the variances in the return series of all-housing sale prices. For the apartment prices, we have the similar pattern of the variance decompositions as in the case of all-housing market—more variation in rental price than in sale price. The variance decompositions of the forecast errors for the housing markets are consistent with the results of impulse responses. That is, the portions of the variances in both sales and rentals sharply increase

9) The variations in inflation due to shocks in the asset prices are not presented because the main focus of this section is to analyze the impact of inflation on the asset prices.
around the second month for inflation shock. <Table III-4> also represents that the largest portions of the variance in most of housing price indices due to shock in inflation are explained at the periods after 7 to 11 months. The largest variation in housing price returns is found in returns on the all-housing rental price, 31.4%. The second largest variation is found in the apartment rental prices at seven month, 29.75%. Meanwhile, the portion of variance in stock return explained by a shock to inflation is negligible.

IV. Summary and Conclusions

The main objective of this paper is to examine the traditional belief that real estate provides an effective hedge against inflation. Using the housing and stock indices of Korean markets during the periods of 1986-1997, the empirical results show that returns on four types of housing markets provide attractive hedges against both actual and expected inflation. Moreover, the results reveal that the rental markets produce more attractive hedges against inflation than do sale markets. Therefore, these series, when included in an investor’s portfolio, are likely to provide sufficient hedge against the inflation risks. Further, there is strong evidence that housing properties yield better hedging effectiveness against expected inflation shocks than unexpected inflation trends. This finding indicates that when used for personal forecasts of expected inflation, the investment in residential property provides at least some protection against inflation. Meanwhile, the inflation hedging capacity of stocks can be regarded as being poor and perverse.

The results of VAR analysis provide similar patterns across the four types of housing markets. Though shocks to inflation produce positive responses in four types of housing markets, rental markets show more responses to the inflation. According to the analysis of variance decompositions, larger variations in housing prices explained by inflation shocks are found in the cases of rental markets, rather than in the selling markets, whereas the
portion of variance in the prediction for stock is negligible. Therefore, based upon the results of static and dynamic analyses, the rental markets could be regarded as being more flexible in the price adjustment to inflation shock.

In general, housing properties in Korea are found to be better inflation hedges than common stocks. This finding implies that the institutional investors like fund managers who are managing in particular pension funds would better contain housing properties in order to avoid erosions of the real returns invested due to the inflation risk, especially in the long-run.

Further direction for this line of research could examine how the Korean financial crisis occurred in 1997 has contributed to the inflation-hedging ability of the real estates and financial assets.

References


국문요약

본 논문은 우리나라 주택·주식 수익률의 인플레이션에 대한 헤지(hedge) 효과를 분석하는 데 그 목적이 있다. 1986부터 1997년까지의 월별 자료를 이용하여 정태적으로 분석한 결과, 외국의 실증 분석과 비슷한 결과를 얻었다. 즉, 주택의 경우 인플레이션에 대하여 헤지(hedge)기능을 나타내지만 주식의 경우는 헤지 능력이 없다는 결과가 도출되었다. 또한 정태적 분석에서 뿐만 아니라 VAR를 이용한 동태적 분석에서도 주택의 전세시장이 매매시장보다 인플레이션에 대하여 헤지(hedge)능력이 높음을 보여주고 있다. 이는 전세시장이 가격조정기능에 있어서, 매매시장에 비하여 보다 유연함을 함의한다.